

Remarks

A corrected drawing sheet is attached which provides the reference character 11 for the heat exchanger exit head as recited in the specification at page 3, line 6 and page 7, line 3. Applicant regrets the inadvertent omission of this reference character from the drawing originally submitted.

The drawing was objected to under 37 CFR 1.83(a). Reconsideration is requested.

The original drawing shows tubular reactor 1 with outlet head sheet 4 and lower exit heat 6. Welded to lower head 6 is heat exchanger 7 which is welded to a 5.7 ft diameter opening in head 6. Tube sheets 9 and 10 are provided to support the tubes in heat exchanger 7 and exit means 17 are provided in lower head 11 to remove the cooled reaction gases.

Applicant respectfully submits that the drawing properly illustrates the claimed features of the apparatus of the invention. With the specification and drawing the skilled person would fully understand the structure and function of the invention. The drawing is a schematic representation of the apparatus of the invention and fully illustrates the essential features thereof.

Withdrawal of the rejection under 37 CFR 1.83(a) is respectfully requested.

Claim 1 has been corrected for language consistency as required by the Examiner and to specify that the heat exchanger is integrally affixed to the reactor outlet head consistent with the drawing and the specification at page 3, lines 1-2 and page 4, lines 3-5.

Claim 1 has also been amended to specify that the tubular heat exchanger also has both an upper and lower tube sheet as illustrated respectively by sheets 9 and 10 in Figure 1 which support tubes in the exchanger.

The claims have been rejected under 35 USC 102(b) as being anticipated by Ozeno et al USP 4,921,681 and under 35 USC 102(b) as being anticipated by Sawada et al USP 5,292,904. Reconsideration of these rejections is requested in light of the following discussion.

Essential to the apparatus of the present invention is the provision of a tubular reactor having an inlet and outlet head and a tubular heat exchanger integrally affixed to the reactor outlet head. The tubular reactor in turn has an upper and lower tube sheet supporting the heat exchanger tubes. The apparatus is especially useful for the production of ethylene oxide.

The apparatus of the invention is advantageous in that it is relatively inexpensive to fabricate and operate, and it provides advantageous rapid cooling of reaction gases while minimizing the formation of undesirable byproducts.

Applicants respectfully submit that the apparatus claimed herein is not shown or suggested by the cited prior Ozeno et al and Sawada et al references. Unlike the apparatus of the present invention, the references each provide an apparatus which does not include elements critical to the present invention.

In each reference the apparatus depicted shows a reaction tube which has a preheat zone, a reaction zone and a cooling zone. Absent from these apparatus is a provision for a separate tubular heat exchanger affixed to the exit

reactor head with upper and lower sheets supporting tubes in the heat exchanger.

Ease of assembly and flexibility of operation which is achieved by the apparatus claimed herein is not achieved by the apparatus of either of the references. In the present invention, by virtue of the tubular heat exchange assembled as affixed to the reactor exit head the reactor gas cooling can be carried precisely over a wide range of conditions.

Conversely, in the apparatus of each reference where the reactor tube has both reaction and cooling zones, the flexibility of operation is inherently limited and the advantages derived from the present invention are not achieved.

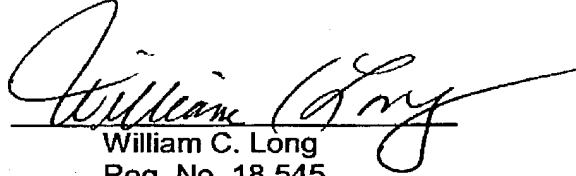
Lacking from the teachings of the Ozeno et al and Sawada et al references is an apparatus having the claimed components critical to the present invention. Applicants respectfully contend that the skilled worker would not be led to the instant novel apparatus from a consideration of the references.

The Examiner is respectfully requested to reconsider the objection of the claims herein presented as unpatentable under 35 USC 102(b) over Ozeno et al and Sawada et al. Allowance of the claims now presented is respectfully requested.

No new claims have been added and accordingly it is believed that no additional fees are owed at this time. Should this be incorrect, authority is given to charge any deficient amount to Deposit Account No. 12-2138.

Allowance is requested.

Respectfully submitted,



William C. Long
Reg. No. 18,545
Attorney for Applicant (s)

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William C. Long, P.A.
118 Washington Street
Morristown, NJ 07960
(973) 540-8470